Math 105 Name _____
Quiz 5
11/15/12

Read directions carefully and show all your work. Partial credit will be assigned based upon the correctness, completeness, and clarity of your answers.

The top of a ladder slides down a vertical wall at a rate of 0.75 m/sec. At the moment when the bottom of the ladder is 15 meters from the wall, it slides away from the wall at a rate of 0.4 m/sec. How long is the ladder?

a. Draw a picture and use *letters* to label the appropriate variables and unknown values.

b. Identify *all* rates that you know. [Be sure to consider the rate of change for the length of the ladder!]

c. What quantity are you trying to find?

d. Find an equation that relates the *undifferentiated* variables (NOT the rates).

e. Differentiate implicitly with respect to t (time).

f. Substitute numbers for the quantities and rates you know and solve for the unknown. Use this to find the desired quantity. Include units in your answer.